

Naturalistic Occupation 1

A Neuro-Rehabilitative Model of Practice with the Focus on Naturalistic Occupation

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Note: This document describes a Capstone Dissemination project reflecting an individually planned experience conducted under faculty and site mentorship. The goal of the Capstone Experience is to provide occupational therapy doctoral students with unique experiences whereby they can demonstrate leadership and autonomous decision-making in preparation for enhanced future practice as occupational therapists. As such, the Capstone Dissemination is not formal research.

Abstract

Adults who have experienced a stroke experience a wide variety of symptoms and limitations associated with the condition. When treating adults who have had a cerebrovascular accident it is essential to treat the whole person and to consider the goals he or she has for oneself while also achieving the goals of the therapist. In this case study two models of practice were used for guidance, the Client-Centered model of practice (Law & Mills, 1998) and the Neuro-developmental Treatment model of practice (Bobath, 1978). The Canadian Occupational Performance Measure (Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 1994) and the Wolf Motor Function Test (Morris, Crago, & Taub, 2002) were used to assess the client's current status and progress over 8 weeks. Interventions involved opportunities to practice occupations of daily living, craft occupations, modifying the environment, and family education. The results were significant improvement in her quality of movement and ability to complete occupations of daily living independently.

Introduction

Diagnosis

Julia is a 29 year old adult who began receiving outpatient occupational therapy services at Therapy Solutions at Van Wert County Hospital on March 5, 2008. She is participating in occupational therapy intervention following a lengthy and complicated medical stay in which she experienced a cerebrovascular accident, and received a diagnosis of critical illness myopathy. At the time of her initial evaluation in 2008 Julia exhibited severe tremors with initiation of movement, increased extensor tone in her right upper extremity, decreased strength and range of motion in bilateral upper extremities, generalized weakness throughout her body, and required varying levels of assistance with completion of her occupations of daily living (ODLs). Initially, Julia was participating in occupational therapy, physical therapy, and speech, and is currently participating in occupational therapy and physical therapy, with the possibility of speech being reinstated.

Background Information

Julia was born on September 28, 1980. At the age of 16 she attended a mandatory high school physical where a heart murmur was detected. After this discovery further testing ensued, and she began to see a specialist in Fort Wayne, Indiana as she was diagnosed with hypertrophic cardiomyopathy. This condition causes the heart muscle to enlarge or hypertrophy, most commonly in the septum of the heart. Due to this enlargement of the muscle the ventricles of the heart are required to pump harder to overcome the now more narrow pathway. To provide perspective, hypertrophic cardiomyopathy is the most common cause of cardiac arrest in adults under the age of 30 (Cleveland Clinic, 2009).

On April 23, 2007 Julia was accompanied by her husband, her mother, and her father as she went to Lutheran Hospital in Fort Wayne, Indiana to have a septal myectomy. In this procedure surgeons remove part of the septum of the heart to allow blood to flow through unobstructed. After this surgery approximately 5% of patients will require an Implantable Cardioverter Defibrillator, or pacemaker (Salberg, 2009). The surgery was proposed to be fairly routine and Julia was to return home from the hospital in approximately one week, but on the morning of the surgery the doctors informed her family that the muscle was larger than expected and hence would make the surgery more challenging, lasting approximately four hours. During surgery complications arose and nine hours later Julia came out of surgery. Julia's parents report that she remained sedated as the physicians wanted her body to rest and heal and when sedation was decreased Julia became agitated and began to pull at her various lines, leads, and tubes. In the days following her surgery Julia experienced several microscopic, or mini strokes and battled a bacterial infection of her heart valve. On Sunday, May 13, 2007, Mother's Day, Julia underwent a Magnetic Resonance Imaging scan, or MRI to confirm that she had several small strokes. A concrete reason or cause of her strokes was never explicitly given, but her family was told it could have happened during the operation, when she was having breathing difficulty post surgery, or during her complicated stay in the Intensive Care Unit (ICU). Following her surgery Julia remained in the ICU for 33 days and was then transferred to Select Specialty Hospital, a long term acute care facility, for Pulmonary Rehabilitation. She remained here for approximately three months where therapy focused on swallowing, speech, and respiration without a ventilator. In August of 2007 Julia had surgery to install a pacemaker at Lutheran Hospital, and after a short

recovery there she was then transferred to Lutheran Rehab in Fort Wayne, Indiana where she participated in inpatient rehabilitation for one month.

Julia also received a diagnosis of critical illness myopathy. This is a condition that typically develops in patients who have had lengthy hospitalizations in the ICU and who have been treated with a wide variety of medications. The most common symptoms of this condition are difficulty weaning from mechanical ventilation and generalized weakness in the muscles throughout the body (American Association of Neuromuscular & Electrodiagnostic Medicine, 2010).

Julia finally returned home on her 27th birthday, September 28, 2007. Once home she received home health physical and occupational therapy for the months of October, November, December, and January where therapists' intervention focused on mobility in her home. On March 5, 2008 Julia began intervention at Therapy Solutions at Van Wert County Hospital for outpatient therapy services.

Julia's outpatient physical therapy has focused largely on transfers, balance, and gait training. Julia's outpatient occupational therapy in the past has focused on upper extremity strengthening, fine motor coordination, and developing various ODL skills. To achieve various goals relating to ODL skills intervention was typically addressed through recommendation by the therapist and patient report as the patient was uncomfortable addressing the ODL issues of dressing and toilet hygiene in a busy and crowded clinic.

Models of Practice

Client-Centered Model of Practice.

The Client-Centered Model of Practice has been embraced by Canadian occupational therapists since the 1980s with an emphasis on the work of Carl Rogers

(Law & Mills, 1998). In client-centered practice the patient states the goals for therapy in conjunction with the therapist and both evaluate outcomes from treatment interventions (Law & Mills, 1998). The model uses a nondirective approach from the therapist to allow the client to lead the way and for the therapist to truly learn of the client's life experiences. It is an essential concept that the therapist spends an extended amount of time with the client to learn about what he or she is experiencing. Law, Baptiste, & Mills (1995) state 6 essential concepts for client-centered practice as client autonomy and choice with treatment, showing respect for the patient's diversity, sharing responsibility, enabling the patient, using appropriate context, and the therapist must be accessible and flexible during treatment (as cited in Law & Mills, 1998). Practitioners must show a respect towards the client, his or her family, the decisions these individuals have made, and how they cope with the new challenges they may encounter (Law & Mills, 1998).

The setting for client-centered practice should be a situation in which the client feels comfortable in his or her surroundings. Rehabilitation clinics can often be viewed as friendly environments; however, they can occasionally be viewed as noisy and crowded (Law & Mills, 1998). The therapist should assess the environment and the occupations used for treatment to determine the environment that is a best fit for that treatment session. When working with clients the context is important as well as the relationship the therapist and client have. It is best if the client and therapist possess an open and caring relationship as the client and therapist work together to solve issues with occupational performance (Law & Mills, 1998). With the client-centered model the therapist focuses on enabling the client and facilitating involvement with goal setting and treatment planning. The therapist must also understand that the client is still part of his or

her environment or community and it is beneficial if treatment interventions can involve the naturalistic settings that the patient is involved in (Law & Mills, 1998).

Neuro-Developmental Treatment.

The Neuro-Developmental Treatment model of practice was developed by Berta and Karel Bobath during the 1940s, and originated to assist children with cerebral palsy and adults with hemiplegia (Gillen, 2006). When treating adults with hemiplegia, some pattern of spasticity is almost always evident in specific patterns of atypical coordination (Bobath, 1978). The change of muscle tone and abnormal coordination is due in part to the lack of regulation of the various reflexes (Bobath, 1978). The postural reflex is yielded through a variety of automatic movements that are learned during infancy, which are, righting reactions, equilibrium reactions, and automatic adaptation of the muscles pertaining to postural change (Bobath, 1978). With the patient who has hemiplegia, the reflexes that were fully integrated reappear and interfere with normal movement. These interferences are associated reactions, asymmetrical tonic neck reflexes, and the positive supporting reaction (Bobath, 1978).

Treatment interventions with this model of practice focus on rehabilitation of the affected side instead of compensatory practices with the unaffected extremities (Bobath, 1978). To yield the best retention and carryover it is essential for the client to practice between treatment intervention sessions and to care for their involved extremities through self care occupations (Gillen, 2006). The main goal of treatment should be to change the atypical movement patterns associated with the affected side of the body (Bobath, 1978). Therefore, patterns are used to inhibit postural reflexes and lead to facilitation of voluntary movements (Bobath, 1978).

Techniques for treatment are divided into three separate stages of recovery (Bobath, 1978). In the initial flaccid stage the therapist focuses on weight bearing on the affected side and balancing in both sitting and standing positions, as well as bilateral skills for the upper extremities and trunk. During the spasticity stage, spasticity has set in and treatment coincides with some tasks completed during the flaccid stage, however they are now progressed and completed in the sitting or standing position (Bobath, 1978). The upper extremity is typically flexed and internally rotated at the shoulder and the lower extremity is extended and plantar flexed. The third and final stage is that of relative recovery. Patients in this stage may be able to walk without assistance, and use their affected extremity, however may struggle somewhat with manipulation of items (Bobath, 1978). Treatment focuses on inhibiting and preventing movements at specific joints while moving another (Bobath, 1978). NDT and its methods have developed over the years and current courses do not focus on the acquisition of skills in a developmental sequence as they used to, but focus on acquiring movements and positions that are functional for a specific person's life (Gillen, 2006).

When treating an adult with hemiplegia it is essential for the treatment team to work together to ensure carryover from what is learned in the clinic to daily life (Bobath, 1978). Bobath states,

This is especially so with regard to the bilateral use of the arms and hands and, in some cases, in the use of the affected hand for independent grasp and release regardless of the position or movement of the arm at the shoulder girdle and at the elbow (1978, p. 144).

Therapists need to work together and be sure that treatment sessions relate to the person's life roles, condition, support systems, and environment allowing the therapist to create intervention sessions that are specific to the client's limitations and the desired functional outcomes (Gillen, 2006). Cerebrovascular accidents affect a person's body and physical condition as well as their roles and the roles of those around them. By creating individualized goals and treatment interventions the therapist can increase active participation and allow the client to return to the meaningful roles of his or her life (Gillen, 2006).

Interventions should focus on the use of functional occupations as appropriate context yields increased engagement and therefore increased retention of functional improvements and carryover into realistic situations (Gillen, 2006). By using functional occupations a therapist can create an environment that relates to one's roles and own specific environment. Therefore, increasing interest and promoting achievement of additional functional outcomes and improving retention and carryover for those functional outcomes (Gillen, 2006). Gillen states, "effective use of NDT requires that movements are practiced in the context of functional activities" (2006, p. 775).

Scientific Evidence for the Models of Practice

Client-Centered Model of Practice.

The client-centered model of practice is a widely used and regarded theory in occupational therapy. Along with the actual model of practice, the Canadian Occupational Performance measure (Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 1994) is also frequently used and well thought of in occupational therapy practice.

In a study of client empowerment, Taylor (2003) analyzed three individual participants with chronic fatigue syndrome and the progress they each felt they made towards their own goals using a client-centered model of practice. Data was collected for confidence ratings and qualitative data collected during group discussion sessions. The first participant made clear progress towards two of her three goals over seven sessions. The second participant made significant progress towards two of his goals and moderate progress towards one goal over seven sessions. The third and final patient reported substantial progress towards the accomplishment of three of four goals. Empowering clients through a client-centered model of practice allows clients to have increased control over the services they receive, yet maintains consistency with the goals of the occupational therapist to improve functional abilities and quality of life (Taylor, 2003).

Horowitz depicts two case examples of older adults and home evaluations through the use of a client or family centered approach (2002). The first client was an 87 year old woman who lived with her son and wanted to become more independent and less reliant on her son. Through the use of client-centered techniques that promote self-efficacy the patient was able to have her living situation modified and to regain independence with self-care tasks, except for bathing, cook simple meals, and was able to use her right arm with several functional activities (Horowitz, 2002). The second client was a 62 year old woman who had experienced a cerebrovascular accident and returned to live with her daughter (Horowitz, 2002). Her symptoms involved limited mobility, expressive aphasia, and spasticity in her right arm. Through the use of a family and client-centered approach to therapy the patient's daughter experienced a decline in caregiver burden, safety concerns were solved and addressed for the patient's mobility, increased motivation for

self-care, and improved socialization. The patient was eventually able to return to her home with supervision and assistance from her family (Horowitz, 2002).

Phipps and Richardson completed a study using the Canadian Occupational Performance Measure (Law, Baptiste, Carswell, McColl, Polatajko, & Pollock, 1994) to evaluate outcomes using a client-centered approach with adults with traumatic brain injury and stroke (2007). The COPM was administered at the start of occupational therapy treatment and upon discharge, which was between four and 12 weeks later. For the area of performance there was a mean change score of 3.29 points and for the section of satisfaction there was a mean change score of 3.53. For the sample as a whole there was a significant increase in self-perceived performance as judged by the COPM and also for satisfaction with occupational goals (Phipps & Richardson, 2007).

Neuro-developmental Treatment.

The use and effectiveness of Bobath's Neurodevelopmental Treatment is controversial and there is no clear cut proof of its effectiveness or superiority for treating adults with brain injury. Some studies demonstrate the positive use of this model of practice with a wide variety of participants (Salter, Camp, Pierce, & Mion, 1991; Sietsema, Nelson, Mulder, Mervau-Scheidel, & White, 1993; Tsorlakis, Evaggelinou, Grouios, & Tsorbatzoudis, 2004), while others discredit the model and its effectiveness (Paci, 2003; Seneviratne & Reimer, 2004). Researching this model of practice poses a difficult task as it is challenging to operationalize and define the methods commonly used for Neuro-Developmental Treatment (Kollen, Lennon, Lyons, Wheatley-Smith, Scheper, Buurke, Halfens, Geurts, & Kwakkel, 2009). Also, it is often difficult to generalize

findings as studies may have a small sample size and participants have a wide variety of diagnoses and symptoms.

Salter, Camp, Pierce, and Mion conducted a study reviewing the charts of 87 patients who had a stroke (1991). Of the 87 patients 43 were treated using an NDT approach and 37 were treated using an approach focusing on the patient's non-hemiplegic side. The results were not significant, however, 86% of the patients from the NDT group were discharged home, compared to 76% from the control group (Salter, Camp, Pierce, & Mion, 1991).

A study was conducted evaluating the effects of using an NDT approach two times a week compared to five times a week for 16 weeks in 34 children with cerebral palsy (Tsorlakis, Evaggelinou, Grouios, & Tsorbatzoudis, 2004). The researchers assessed gross motor function before and after the intervention and both groups had a statistically significant increase in gross motor function at the completion of the study. Also, the group who received NDT treatment five times a week showed a statistically significant improvement in motor function compared to the group that was seen twice per week. Unfortunately, this study is not generalizable to the case example, however, it does demonstrate the effectiveness of the NDT approach with another population (Tsorlakis, Evaggelinou, Grouios, & Tsorbatzoudis, 2004).

In a study by Sietsema, Nelson, Mulder, Mervau-Scheidel, & White (1993) the effects of using NDT principles in an occupationally embedded task for reaching were analyzed. 20 participants who were post traumatic brain injury reached to press and activate a button for a game compared to merely reaching out with their hands. Results yielded that in the occupationally embedded session that the participants reached, on

average, 12.22cm further than with the rote condition (Sietsema, Nelson, Mulder, Mervau-Scheidel, & White, 1993). This study demonstrates the importance of incorporating tasks that are truly occupational and functional as compared to utilizing rote exercise in treatment.

Rationale for use of Models of Practice with this Case

At the start of this case study Julia identified several key goals that she was interested in achieving. The goals Julia had for herself involved acquiring the ability to be able to functionally complete specific ODLs independently. Since Julia had specific goals for herself the Client-Centered model of practice was used as the client and therapist would be working together to achieve Julia's goals. The Neuro-Developmental Treatment model of practice was chosen as it emphasizes the use of naturalistic context and regaining the ability to perform movements in an automatic fashion. For this case study the emphasis was on the ability to perform various ODLs while regaining normal, active movement. Julia had previously shown interest in working on these occupations, however, had always declined to address them in the busy clinic. With the emphasis on naturalistic context the client and therapist were able to address the ODL concerns in the client's actual home environment to allow for improved retention and carryover into the actual setting.

Uniqueness of Case

Julia is a resident in a small community in West Central Ohio. To demonstrate how small the community is, the total population for the county is 28,748 (U.S. Census Bureau, 2010). Her medical past is complicated and severe regarding her past surgical history and when she had her cerebrovascular accident. She had several microscopic

strokes, and therefore, presents with bilateral limitations, rather than limitations restricted to one side of the body. She also has generalized weakness throughout her body due to critical illness myopathy. Julia has made significant improvements with her strength, range of motion, coordination, and occupations of daily living. Her individual case is very unique in that she is three years post-accident and she is still continuing to make slow steady progress to achieving her goals.

Evaluation

Julia had recently been on hold for outpatient therapy due to surgery in November of 2009 to replace her pacemaker. She initially began outpatient occupational therapy treatment again on March 5, 2008. Due to this recent surgery Julia experienced a decline in the range of motion, strength, and coordination of her left upper extremity, which had previously been her more dominant, higher functioning arm and hand. Her initial assessment for this case study was completed on February 15, 2010 and the follow-up or reassessment was completed on April 23, 2010. It is significant to note that April 23, 2010 was the three year anniversary of her first heart surgery.

Graded Wolf Motor Function Test (Morris, D., Crago, J., & Taub, E., 2002).

The Wolf Motor Function Test (WMFT) was initially administered on February 15, 2010 and a post-test of the assessment was given on April 23, 2010. The WMFT measures motor function for 13 different areas and correlates with the NDT model of practice as they both pertain to motor function and quality of movement. The left upper extremity was tested first and completed all 13 items, before the 13 items were administered for the right upper extremity. Each item is rated for functional ability on an eight point likert type scale from 0-7 for the quality of movement. Items are also timed

for their length of completion. These two measures give a Functional Ability Score

(mean of functional ability total) and a Time Total (median time of all items).

	L Time (seconds)	L Functional Ability	R Time (seconds)	R Functional Ability
1) Forearm to Table (Pre)	1	6	1	5
1) Forearm to Table (Post)	1	6	1	6
2) Forearm to Box (Pre)	2	5	2	5
2) Forearm to Box (Post)	2	5	3	6
3) Extend Elbow (Pre)	1	6	2	5
3) Extend Elbow (Post)	1	6	1	6
4) Extend Elbow w/weight (Pre)	2	5	3	5
4) Extend Elbow w/weight (Post)	1	5	1	6
5) Hand to table (Pre)	1	5	2	5
5) Hand to table (Post)	1	5	1	5
6) Hand to box (Pre)	1	5	1	5
6) Hand to box (Post)	2	5	1	5
7) Reach and Retrieve (Pre)	3	5	5	5
7) Reach and Retrieve (Post)	2	5	3	5
8) Moving foam stick (Pre)	8	4	11	4
8) Moving foam stick (Post)	6	5	7	5
9) Lift washcloth (Pre)	3	5	4	4

9) Lift washcloth (Post)	3	5	3	5
10) Flip light switch (Pre)	2	4	4	4
10) Flip light switch (Post)	3	4	3	4
11) Lift pen (Pre)	5	5	4	4
11) Lift pen (Post)	3	6	5	5
12) Lift cotton balls (Pre)	5	5	7	4
12) Lift cotton balls (Post)	5	6	6	5
13) Lift basket (Pre)	4	5	6	4
13) Lift basket (Post)	5	5	5	5
Median Time Total (Pre)	2		4	
Median Time Total (Post)	2		3	
Mean FAS Total (Pre)		5		4.5
Mean FAS Total (Post)		5.23		5.23

Canadian Occupational Performance Measure (Law, Baptiste, Carswell, McColl, Polatajko, Pollock, 1994).

The COPM is a self-report measure that allows therapists to assess a client or patient's perceptions on his or her occupational performance. The measure also allows patients to identify occupations and tasks that are important to him or herself, therefore allowing the therapist to set meaningful goals and create engaging treatment interventions. When the COPM was completed several tasks were identified by Julia that the occupational therapists were unaware were an issue or that the patient was interested in completing on her own. This provided an excellent tool for goal setting and intervention

planning. The post-test was completed on April 23, 2010 and the client stated an increase in three of the five areas for both performance and satisfaction. Her scores for both the pre-test and post-test are depicted in the table below.

	Performance (Pre)	Satisfaction (Pre)	Performance (Post)	Satisfaction (Post)
Take a shower independently from start to finish	4	6	8	8
Walk short distances independently	0	0	1	4
Work a full day	5	7	5	7
Attend sporting events with her husband	4	4	6	6
Spend more time with nieces and nephews	5	5	5	5
Total	3.6	4.4	5	6
Change in Performance	1.4			
Change in Satisfaction	1.6			

Strength

Julia's strength was initially assessed in her hands and fingers on February 15, 2010 and a post-test was completed on April 23, 2010. It was assessed using a grip dynamometer and a pinch meter. The results of this assessment are listed below. When assessing strength it is important to also think about tone as strength measurements may fluctuate with fluctuations of one's tone, thus not giving the evaluator a true measure of strength. An asterisk denotes that a moderate tremor, or ataxia was observed with these movements.

	Left	Right
Grip (Pre)	45#	42#
Grip (Post)	30#	*30#
2 point (Pre)	7#	*2#
2 point (Post)	10#	2#
3 point (Pre)	11#	*3#
3 point (Post)	9#	4#

Key (Pre)	8#	*5#
Key (Post)	9#	5.5#

Range of Motion

Julia's range of motion was initially assessed on February 15, 2010 and a post-test was completed on April 23, 2010. Her results can be viewed in the table below and depict a slight increase in range of motion for her right shoulder. It is hypothesized that this discrepancy is due to her recent pacemaker surgery and the restrictions for her left shoulder that accompanied the procedure.

	Left	Right
Shoulder Flexion (Pre)	142	150
Shoulder Flexion (Post)	138	142
Shoulder Abduction (Pre)	147	148
Shoulder Abduction (Post)	126	155
External Rotation (Pre)	62	66
External Rotation (Post)	80	90
Elbow Flexion (Pre)	129	132
Elbow Flexion (Post)	140	144
Elbow Extension (Pre)	-1	2
Elbow Extension (Post)	0	0
Wrist Flexion (Pre)	65	45
Wrist Flexion (Post)	80	45
Wrist Extension (Pre)	81	58
Wrist Extension (Post)	60	85
Supination (Pre)	51	70
Supination (Post)	75	45
Pronation (Pre)	80	90
Pronation (Post)	90	90

Coordination

Nine Hole Peg Test (Mathiowetz, Weber, Kashman, & Volland, 1985)

The last assessment completed was the Nine Hole Peg Test to assess the dexterity and coordination in Julia's fingers and hands. It was also completed on February 15, 2010 as well as on April 23, 2010. The results are depicted in the chart below and

demonstrate the differing fine motor abilities associated with each hand. The results of this assessment coincide with Julia's personal experience as she is heavily reliant on her left hand for fine motor tasks.

	Left	Right
Pre-test	54 seconds	1 minute 44 seconds
Post-test	54 seconds	1 minute 37 seconds

Occupational Therapy Goals

Julia was to be seen two times per week, one session would be held in the outpatient clinic and one session would be held in her actual home. Initially, eight home visits were scheduled, however, one was cancelled due to a scheduling conflict, and one was cancelled and the parent/family meeting was held instead. A total of six, one to two hour visits, were completed in Julia's home. Many of Julia's goals pertain to occupations of daily living and it was proposed to be best to work on these tasks in her home to allow for the most naturalistic environment and to allow for appropriate suggestions in that specific context. The weekly in clinic sessions focused on any ODLs and movement components that needed additional attention that could be completed in the outpatient clinic. Then one session was held each week in the client's home focusing on a variety of her goals or one specific goal for that session. For this case study all of the goals are occupationally embedded and focus on the completion of various ODLs, however, going along with the NDT model of practice, some goals also incorporate regaining desired movement patterns and actions. These goals were chosen as Julia expressed vast interest in being as independent as possible and to begin staying at home by herself.

Goal 1. Julia will don her socks 75% of the time using the technique of crossing her legs and flexing the trunk forward by the completion of this case study.

Justification: Julia completes her morning routine essentially independently; however, there are a few tasks that she still requires assistance to complete. Currently, Julia is dependent on her parents or mother-in-law to don her socks in the morning. Julia would like to be independent with all tasks of her morning routine so she can be alone by herself and will only need transportation assistance to get to appointments and school. By using this technique it will assure that associated reactions do not inhibit the completion of the task.

Goal 2. Julia will complete toilet hygiene independently 90% of the time by the time of discharge from this case study by shifting her weight forward and balancing equally on her lower extremities.

Justification: Julia seeks to be able to be left alone at home for short periods of time. It is essential that she be able to manage toilet hygiene independently before this can happen. For this task it is important that Julia has good balance in her lower extremities and coordination throughout her upper extremities.

Goal 3. Julia will don and fasten her bra independently 3/3 trials by fastening in the front and twisting and pulling around by the completion of this case study.

Justification: Julia completes her morning routine essentially independently; however, there are a few tasks that she still requires assistance to complete. Currently, Julia is dependent on her mother or mother-in-law to help hook her bra. She is able to put it on, but is unable to fasten the straps on her own. Julia would like to be independent with all tasks of her morning routine so she can be alone by herself and will only need

transportation assistance to get to appointments and school. This occupation is an occupationally embedded task that allows the client and therapist to work on fine motor coordination for the act of fastening, as well as functional upper extremity strength and coordination to pull and twist the bra. As Julia lacks the range of motion to reach completely behind and up to fasten typically, this method will be perceived as more appropriate.

Goal 4. Julia will don her coat with minimum assistance by placing the more affected arm into the coat first, followed by the less affected extremity, for 50% of the time by the time of discharge from this case study.

Justification: Julia seeks to be as independent as possible with her daily tasks to allow for independence at home and only to be reliant on others for transportation. Therefore, if she could don her coat she would then be completely ready and would only necessitate assistance with transportation. For those with hemiplegia they are instructed to put their affected arm in first, completely pull up the sleeve, and then flip the jacket over his or her shoulder and put the other arm in. As Julia has weakness and decreased coordination in both upper extremities, for this task her left arm will be deemed the more affected as she experienced a loss of range of motion after her recent pacemaker surgery.

Goal 5. Julia will assist with hair care and styling 100% of the time by the time of discharge from this case study.

Justification: Julia completes her morning routine essentially independently; however, there are a few tasks that she still requires assistance to complete. Currently, Julia is dependent on her mother or mother-in-law to brush and style her hair. Julia has short, very thick, curly hair and poses a significant challenge with combing and styling. Julia

would like to be independent with all tasks of her morning routine so she can be alone by herself and will only need transportation assistance to get to appointments and school.

This task will assist with addressing her shoulder range of motion and fine motor coordination. It should be completed with flexion at the shoulder and elbow, and pronation of the wrist. The therapist and client must be sure the elbow does not pull forward or down during movement (Bobath, 1978).

Goal 6. Julia will complete a shower from start to finish with supervision by demonstrating good balance, reaching, and coordination 75% of the time by the completion of this case study.

Justification: Julia would like to complete ODLs independently and without the assistance of her family members. Julia is interested in increasing her independence and would like to no longer need to rely on others for self-care. This occupation will assist in attaining the movements of unsupported balance in sitting, reaching out and overhead, as well as coordination of her upper extremities.

Goal 7. Julia will cook a simple meal with minimum assistance 60% of the time by the time of discharge from this case study.

Justification: Julia would like to be able to be left home alone for short periods of time and if this is possible she should be able to make simple meals and snacks for herself independently. Currently, she makes her own protein shake for breakfast each morning independently and has begun to make simple snacks such as toast and cereal. It is hypothesized that it would also improve her self-esteem if she could create a meal for herself and her husband instead of relying on her family to do so. This goal will address her standing balance and coordination while reaching for items and standing at the

counter. Also addressed with this goal will be the concept of weight-bearing through her upper extremities when she supports herself with her upper extremities on the counter.

Goal 8. Julia will begin to stay at home by herself for brief periods of time (1-3 hours) for 2-3 times each week by the time of discharge from this case study.

Justification: Julia seeks to be alone for short periods throughout the day and as she accomplishes various goals this will become easier to achieve and she will be able to be left alone for lengthier periods of time. It is also hypothesized that by being alone and independent she will experience an increase in her self-esteem.

Goal 9. Julia will complete community bathroom transfers and clothing management with good balance and supervision 100% of the time by the completion of this case study.

Justification: Julia voiced interest in being able to attend sporting and social events with her husband. In order for this to happen Julia needs to be able to manage public restrooms independently. She currently needs varying levels of assistance for toilet hygiene as well as assistance with some transfers and clothing management in certain public restroom situations. As Julia is still somewhat unsteady when standing with difficult transfers an assistance level of supervision is suggested for her current status. As she progresses and improves she will hopefully be able to complete this goal independently with no supervision to allow for greater independence in the community. This goal will help Julia to work on her balance in standing as she is still somewhat unsteady when on her feet. Through weight-bearing this will help normalize tone and improve strength in her lower extremities.

Interventions and Outcomes

Goal 1. Julia will don her socks 75% of the time using the technique of crossing her legs and flexing the trunk forward by the completion of this case study.

Interventions and Outcome: This goal was largely worked on in Julia's home as she typically arrives at the clinic with her ankle-foot orthosis on both feet and removing and putting them back on is a very time consuming process. Julia was unable to don her socks using the technique of crossing her legs, but was able to adequately flex her trunk and hip to don her socks without any increase in tone. With this method, Julia was able to don her socks with modified independence 2/4 trials with the use of a sock aide. The speed and ease of completion of this task was greatly improved over the treatment sessions, and her coordination with the task greatly improved. Julia was even able to don her tennis shoes independently one time without her braces on. An unforeseen challenge in achieving this goal was the visible lack of circulation in the client's feet. Each morning a member of her family gives her feet a quick massage and stretches her feet and calves out to improve her circulation and stiffness. Therefore, it was suggested to the patient to allow her family to complete this portion of her routine, but to put her socks on by herself.

Goal 2. Julia will complete toilet hygiene independently 90% of the time by the time of discharge from this case study by shifting her weight forward and balancing equally on her lower extremities.

Interventions and Outcome: Toilet hygiene was addressed very early on during the case study. Suggestions were made in the past to use assistive equipment for toilet hygiene, however the client stated she was not interested in this. Intervention at this point focused on range of motion with the trunk and shoulder to allow for adequate reaching behind the

body, as well as balance in a squatting position. To facilitate this Julia would reach for beads and craft pieces to then complete a fine motor craft occupation or game. To address the balance portion Julia would complete sit to stand transfers focusing on keeping her weight forward and controlling her movement. The patient arrived for treatment one day very early on in the case study and stated that she was now able to wipe independently. When asked what happened to elicit this change she informed the therapists that there had been a family emergency and she had to stay alone for a few hours and had stated, "I had to figure it out, so I did." Balance for sit to stand transfers continued to be addressed in both occupational therapy and physical therapy.

Goal 3. Julia will don and fasten her bra independently 3/3 trials by fastening in the front and twisting and pulling around by the completion of this case study.

Interventions and Outcome: When the alternate method of hooking in the front and twisting to the back was initially attempted the client became very frustrated when she was unable to fasten the bra. Another alternate method was then attempted, however, when attempted it did not work. On March 25, 2010 the patient arrived for her physical therapy appointment and stated that she had independently put on her bra that day. When asked what made the difference she stated, "I just sat there and thought to myself, okay, this cannot be that hard, and I just did it." On April 23, 2010, during her reassessment she stated that she has been donning her bra on a consistent basis.

Goal 4. Julia will don her coat with minimum assistance by placing the more affected arm into the coat first, followed by the less affected extremity, for 50% of the time by the time of discharge from this case study.

Interventions and Outcome: To address this goal the student and client practiced donning and doffing her coat over several sessions. The patient was observed to be able to independently don her coat with the left arm first, however required moderate assistance to don with the right arm first. It was then recommended to don her coat beginning with the left arm. This is different than she had been previously completing the task as typically her left arm is the higher functioning, more dominant arm, however, after her recent surgery it experienced a slight decrease in range of motion, therefore is now considered the more affected arm for this task. Julia is now able to independently don a spring jacket or the liner of her winter coat 75% of the time, requiring minimum assistance for the remaining 25% to fix the collar, however, requires minimum to moderate assistance to don her winter coat. It was recommended to Julia to attempt to put her coat on by herself most days of the week, and if she was in a hurry she could request assistance.

Goal 5. Julia will assist with hair care and styling 100% of the time by the time of discharge from this case study.

Interventions and Outcome: Hair care was worked on in her home as well as at the clinic. By the completion of the case study Julia was independently brushing/combing her hair when it was wet and dry as well as styling it with a head band. This has helped with her shoulder range of motion and upper extremity movement as she is able to reach up above to comb and brush the front and back of her hair. She currently uses a spray on gel when her hair is wet for styling and it is difficult for her to use the spray pump of the bottle. It was recommended that she try a foam mousse that she can mix through her hair with her hands and fingers. Julia is now able to complete 75% of her hair care and styling

independently, yet requires assistance if she wants it braided, in a pony tail, or held back with small claw or snap clips.

Goal 6. Julia will complete a shower from start to finish with supervision by demonstrating good balance, reaching, and coordination 75% of the time by the completion of this case study.

Interventions and Outcome: Intervention for this goal was completed at the client's home and was monitored through self report. When Julia completed her shower with the student and therapist she completed 90% of the occupation with supervision, the remaining 10% she required set up assistance. Set up assistance was required to lay out a towel on her power chair, and to get items out of the cupboard that she forgot (washcloth and hairdryer). She is able to complete her shower sitting on a bath bench with no lateral support while reaching for items and reaching around to clean and wash her body and hair. She is also able to maintain balance for her transfer from her power chair to the bath bench, as well as during use of the removable shower head. After completing the occupation in her home, it was recommended to her to make sure she had everything ready to go before she began her shower. The patient reports that she is now completing her shower independently approximately 50% of the time. It should be noted that in this process we are including the acts of dressing and getting ready, as these are particularly difficult and time consuming after the patient is still somewhat wet from her shower.

Goal 7. Julia will cook a simple meal with minimum assistance 60% of the time by the time of discharge from this case study.

Interventions and Outcome: During Julia's treatment two novel cooking tasks were completed and the remaining information was given through self report. On two different

occasions Julia made rice krispy treats on the stove and a chicken dinner in a crock pot. Each task involved Julia completing sit to stand transfers and her ability to stand at the sink, counter, and stove for extended periods of time, as well as her ability to manipulate objects with her upper extremities while standing. For the task involving the stove Julia required stand by assistance to moderate assistance to handle the large hot pot, stir at appropriate times, and for safety with the stove in general. This task was too difficult for Julia to complete on her own and it is not recommended that Julia use the stove without supervision. The next step that was thought to be more manageable would be to create a meal in a crock pot, therefore, avoiding cooking with hot burners and pans. Julia was able to trim the chicken with modified independence using a rocker knife, and opened a can of chicken soup with an electric opener. Julia completed this task with supervision, but it was difficult for her to operate her power chair and use safe sanitary practice after she had touched the chicken. This task specifically was very beneficial for weight-bearing through her lower extremities, as well as through her upper extremities when she supported herself on the counter, used the rocker knife to cut, and lastly, when she cleaned up with a dish rag. Upon completion of the occupation it was recommended to have Julia begin to thoroughly plan a cooking session prior to beginning cooking to get everything ready before she begins actually cooking. Julia self reports that she made frozen pizza on a Saturday and completed the entire task besides putting the pizza into the hot oven and removing it from the hot oven. Julia now makes her breakfast shake in the morning independently and has begun to participate in cooking tasks at home.

Goal 8. Julia will begin to stay at home by herself for brief periods of time (1-3 hours) for 2-3 times each week by the time of discharge from this case study.

Interventions and Outcome: This goal was addressed through a family meeting where the entire treatment team (physical therapy, occupational therapy, speech, physiatrist) and Julia, her husband, mother, father, and mother-in-law were invited to discuss Julia's progress and her potential to stay alone throughout the day. During the meeting the various therapies informed all participants how well she was doing and that they no longer felt she needed 24 hour care and that it was important to allow Julia the time to complete various occupations instead of completing it for her. At this meeting her husband stated he was not comfortable leaving her alone and was afraid of her falling and being set back in her recovery. The family stated that if she was able to get from the floor to her power chair and to open doors independently in the event she would need to get out in an emergency they would feel much more comfortable leaving her at home by herself. Julia reports that she is now being left home by herself for short periods (when her family goes to the store, or goes to pick up dinner) for one to two times per week.

Goal 9. Julia will complete community bathroom transfers and clothing management with good balance and supervision 100% of the time by the completion of this case study.

Interventions and Outcome: This goal was addressed through the completion of bathroom transfers in the outpatient facility. Two separate bathrooms were used, a larger bathroom with grab bars on the right and a smaller bathroom with grab bars on the left. Julia completed the task with contact guard assist for balance and safety when bars were on the right, however, when bars were on the left Julia completed the task with stand by assistance to supervision. Julia demonstrates improved balance when she is able to hold on with her left hand compared to her right hand. As Julia's ability to complete sit to stand transfers and standing balance improve the ability to complete this task will also

improve. With her current status and difficulty with safety for varying types of bathrooms she requires stand by assistance for this task.

Outside Therapy Interventions

Classroom Observation.

Before her surgery Julia was employed through the public school in her community as a Special Education teacher. She returned to work in the late Fall of 2008 for two hours a day one to two days per week. Julia is currently teaching in the Junior High School in her community as a Special Education teacher. She goes to school and teaches for two hours each day from 1:00-3:00pm.

Julia was observed in her classroom on two separate days, Monday, March 1, 2010 and Tuesday, March 2, 2010. Each day Julia walks into her room from the school entrance using her walker and with CGA from her father as her mother guides her power chair from a safe distance behind them. Each day Julia had a moderate loss of balance when she reached her specific classroom and turned the corner around the desks requiring assistance to right herself from her father. Julia walks to her desk and then sits in her power chair and teaches from her chair for the remainder of the day. She checks her school e-mail and various things on her computer until 7th period begins at 1:36pm. There are between 2-5 students in each class, depending on the day and period, that she teaches, and intervention focuses on completing homework and assignments for various subjects.

During school Julia is completely independent once she has transferred into her power chair. Her parents are absent while she teaches for two class periods and Julia is completely on her own with her students.

Physical Therapy Observation

Several observations were completed of Julia's weekly physical therapy session. Her sessions were completed with either a physical therapist, or physical therapist assistant. The sessions that were observed early on in the case study were with the physical therapist assistant and interventions involved walking in the parallel bars, side stepping, balance work on unsteady surfaces, lower extremity strengthening with resistance bands, and walking with her walker around the track.

Towards the latter end of the case study a physical therapist began working with Julia to reassess her current status and revamp her goals and interventions. At this time the physical therapist began working on sit to stand transfers while having Julia lean forward as she has a tendency to lean and push backwards when she stands up. These transfers were performed in a controlled manner with a focus on shifting and balancing her weight forward.

At this time Julia also began walking without the support of her upper extremities on either the parallel bars or her walker with assistance from the physical therapist and stand by assistance from the occupational therapy student. When walking in the gym without the parallel bars the physical therapist stated she was providing "a good moderate assistance" due to the weakness of the muscles in Julia's hips. This task was very meaningful for Julia as she is in a wedding in October of 2010 and her goal is to walk down the aisle without any assistance, including her walker.

Family Meeting

A meeting with Julia's treatment team, herself, and her family was conducted on the morning of April 2, 2010. The meeting lasted for approximately one hour and

involved ten people. The meeting was set up by the occupational therapy student to address Julia's recent improvements and to discuss other potential needs at home, goals, and possibly reducing her 24-hour care.

During the meeting all members of the treatment team discussed their current goals and Julia's progress towards those goals. Members of Julia's family voiced their concern for leaving her home alone for fear of her falling and thus setting her back in her recovery. The family mentioned that if Julia would be able to get from the floor to her power chair in an independent and safe manner they would feel more comfortable leaving her home alone without supervision. They stated it would also help if she would be able to independently turn a door knob and open a door to get outside in case of an emergency.

Along with various physical suggestions the family also discussed a concern for Julia's self-esteem and concept of self-worth. Julia informed the treatment team that she was seeing a psychologist, however, this doctor was very close to the family and her situation and Julia was unsure if she was the best person to meet with for counseling.

The meeting was very beneficial and provided insight into the entire family dynamic. It was beneficial to see the family interaction and the viewpoint of all members of Julia's family. The week following the meeting Julia was questioned how she felt the meeting went and she stated that it went better than she expected, and that she was a little nervous because her husband can be a little outspoken.

Occupational Analysis of Treatment Session

Occupational Form

The occupation of making rice krispy treat "birds' nests" was completed at Julia's actual home. Therefore, the main occupational form was her own actual kitchen rather

than a simulated cooking environment. During the cooking occupation Julia was seated in her power wheelchair and items were located in various positions around her kitchen. Initially, the large pot was located in the drawer underneath the stove, large mixing spoons were located in a drawer at waist level, hot pads were located in a drawer at waist level, measuring cup was located in an upper corner cabinet, wax paper was located in a drawer at waist level, and cooking spray was located in an upper cabinet. All food items (rice krispy cereal, peanut butter, marshmallows, butter, and peanut m&m's) were brought by the therapist and student and were therefore placed on top of the counter rather than in a corresponding cupboard. The counter top and sink are located along the left wall of the kitchen and the stove is located on the right wall of the kitchen. The recipe for the treats is listed on the back of the marshmallow package. The occupational therapy student and therapist were also in the kitchen during the occupation. The student and therapist assisted to provide any required support during the occupation as well as provided verbal cues for correct positioning and completion of various parts of the task.

Occupational Performance

Before starting the occupation Julia washed her hands at the sink by pulling her self up to stand from her power chair and then standing at the sink. Once this was completed she sat back down and relocated her power chair to the counter left of the sink to read the directions for the treats. The therapist then instructed on a modification to the treats to create birds' nests instead of rice krispy bars. Julia then moved her power chair to retrieve wax paper out of a drawer and placed it on the counter to the right of the sink. After that she then went to the other side of the kitchen and positioned her power chair and leaned forward to pull out the drawer beneath the oven. Julia then removed a large

cooking pot from the very back right corner of the drawer and set it on her lap. She then closed the drawer and placed the pot on the front right burner of the stove. Julia then returned to the other side of the kitchen where she retrieved two large spoons from a waist level drawer while sitting in her chair. After that she pulled herself up from her chair and stood up at the counter and reached up with her left arm to open up a cupboard door to retrieve the cooking spray. After this Julia relocated her chair to the far edge of the counter and attempted to stand up in an unsafe position to reach for the cupboard where the measuring cup was located. Julia was then instructed to sit back down in her power chair and the therapist retrieved the measuring cup instead as it was in a challenging location. Julia then picked up the bag of marshmallows, set it in her lap and relocated her power chair to the stove. Julia attempted to open the bag of marshmallows by pulling it open with her fingers. After several unsuccessful attempts at opening the bag Julia returned her power chair to the counter area where she removed a scissors from a drawer and cut the top off of the bag. She then relocated her power chair again to the stove where she poured the marshmallows into the large pot. Julia then returned to the counter to retrieve the butter and brought it back to the stove area. She set the small amount of butter (still in the wrapper) on the stove and pulled herself to stand up, balancing evenly over both lower extremities, but leaning forward slightly onto the stove. She then stood and unwrapped the butter and put it in the large pot. Julia then reached over to her right and threw the butter wrapper away. Lastly, Julia reached up and over and turned the right front burner on low.

Once the melting process was started Julia returned to the counter area where she set out to measure six cups of cereal. Julia used a scissors to open up the bag of cereal

and then measured out six cups of cereal with adequate control and no excess cereal was poured out. Julia then picked up the peanut butter and a spoon and returned to the stove area in her power chair. At this point Julia stood up at the stove and commented that it was somewhat warm by her waist. The student and therapist then suggested that she move the pot to the rear left burner to cook to allow for more room and increased safety near the front of the stove. Julia began to stir the mixture with her left hand as she stabilized the pot with her right. She then unscrewed the lid to the peanut butter, scooped a large spoonful out and attempted to shake it off into the pot. The peanut butter failed to come off the spoon and the therapist assisted by scraping the spoon with another to remove it into the pot. Julia stirred the entire mixture while standing at the stove until it was completely melted. She then returned to her power chair and retrieved the rice krispy cereal that was on the other side of the kitchen. After this she went back to the counter area to retrieve two hot pads and one towel from a drawer beneath the counter. Once she returned to the stove she stood up again and set the hot pads and towel near the front of the stove and dumped all of the cereal into the pot, set the large measuring cup on the right front burner, which was cool at this point, and began stirring with her left hand and stabilizing the pot with her right. The therapist remained at a close stand by assist for this part of the task in case the pot would slide accidentally. Julia commented that it was hard for her to hold the pot and stir as it was somewhat hot near the edge of the handle. The therapist then gave the mixture a quick stir to assess the homogeneity of the mixture. Julia set both hot pads on her lap along with the towel and then set the pot on top, she then relocated her power chair to the counter and placed the hot pot on top of a hot pad. The therapist remained at a close stand by assist for this portion of the task in case the pot

would slide or move off of the hot pads. The therapist laid out a large section of wax paper and opened the bag of peanut m&m's and placed them in a bowl. Julia then successfully scooped out eight large scoops of the rice krispy treat mixture as the therapist formed small bowls in the center. Julia picked out and placed three or four m&m's into the birds' nests. Towards the end of the task Julia needed assistance to scrape out the pot because the mixture had begun to set and became somewhat difficult to work with.

Upon completion of the cooking task Julia gathered all of the dirty bowls and utensils and filled the sink with soap and warm water. She stood at the sink to wash all of the dishes and placed in a drying rack on the left side of the sink. To wash dishes Julia required supervision for balance, but was independent to wash the dishes.

Meaning and Purpose Inferred

It is inferred that Julia felt this was a meaningful task as she was repeatedly seen smiling and engaging with the therapists during the task. It is also inferred that Julia viewed this as a fun and enjoyable social occupation as she engaged in conversation and repeatedly made jokes during the occupation. Julia also picked out specific colors of m&m's to put in each nest with specific people in mind. Upon completion of the task Julia showcased the treats to her mom and dad when they came into the kitchen and appeared to be very proud of her creation. Later that day Julia and her parents dropped off some of the treats for the therapist at the facility to enjoy.

Impacts

Julia impacted the environment for this occupation in several ways. She initially impacted the environment by removing all items from their positions in various

cupboards and drawers. Then she made all of the items dirty for the cooking occupation. Lastly, she then cleaned all of the dishes and utensils and left them in the drying rack. The kitchen counter was left with the wax paper and approximately 12 rice krispy treat nests on top.

Assessment

During the occupation Julia made several trips back and forth from counter to stove to retrieve various items. In the future Julia should sequence out all of the steps and implement an energy conservation and work simplification model of thinking for cooking tasks to decrease the amount of trips back and forth from the counter and stove and up and down to retrieve various items. This task was viewed as very challenging for the patient for safety purposes as well as sequencing and problem solving. If completing a similar occupation in the future it is recommended that the patient have minimum assistance to supervision for the entire occupation.

Adaptations

Julia learned through this task that she should plan tasks out to simplify a cooking task. She also became increasingly familiar with her kitchen area and the location of the items, as she rarely uses her kitchen facilities. Lastly, she learned that she is capable of participating in cooking occupations and will hopefully begin completing simple cooking tasks in the future.

Compensation

During the cooking occupation Julia used a scissors to open three packages as she was not able to tear or pull apart using her hands and fingers. She also used silicone hot pads to provide a non-slip surface to rest the pot on compared to a typical hot pad.

Re-synthesis

For future cooking occupations the therapist recommends tasks and recipes that are simpler to provide a just right challenge for the patient. For example the patient could make a simple cold meat sandwich, no bake cookies, or frozen stir fry. This would allow the therapist and patient to work on small, specific components of the task rather than all components combined together.

Conclusions

Throughout this case the student and therapist strove to adapt and make normal movement patterns as normal as possible. Towards completion of the case study it was decided that compensation was required in some areas. Treatment interventions became a matter of very minimal verbal or physical cueing to elicit normal movement and complete the occupation. Our prediction of why Julia experienced such great outcomes was because interventions were so robustly occupation based and she was able to integrate movement patterns into daily occupations. Lastly, through the use of the Client-Centered model of practice all goals and interventions were meaningful and important to the client yielding higher motivation for those tasks.

Discharge Recommendations

1) Caregiver Involvement: Julia has a very involved and supportive family. This is greatly beneficial to Julia and her current status, however, it is important to have Julia complete as much of a task as possible before stepping in to assist. It is important to Julia to increase her independence and to become less reliant on her family and other caregivers for assistance.

2) Cooking: Julia should continue to make her morning breakfast each day while standing at the sink and also sitting to reach for the various items needed. She should also begin to make simple meals for lunch or dinner a few days each week. As Julia improves with this type of occupation she can begin to make more difficult meals and snacks.

3) Dressing: Julia has made significant progress in this area and should continue to attempt to complete as much of her dressing as possible. In the event that she is in a hurry or is unable to manage a dressing task independently assistance may be given, however, Julia should make a conscious effort to don her socks, bra, and coat each day that she is planning to wear those specific articles of clothing. This task will help Julia continue to work on her balance in a variety of positions.

4) Staying Home Alone: Julia's family should begin to allow her to stay home alone for brief periods of time. Julia should still receive supervision and needed assistance for strenuous tasks, such as showering, dressing, and cooking a difficult meal. However, once she is in her power chair and dressed and ready for the day Julia is able to function independently for short periods of time.

5) Community Mobility: This area continues to be difficult for Julia, particularly in the area of community restrooms. Julia's balance is continuing to improve and with this community transfers will become easier and Julia will feel more secure with their completion. She should continue to work on balance and to complete bathroom transfers in the community as independently as possible and with as little assistance as possible from her family. For Julia's balance she should continue to weight bear equally through both lower extremities and to try to keep her weight shifted forward as she has a tendency to push backwards when she completes transfers and when standing.

References

- American Association of Neuromuscular & Electrodiagnostic Medicine. (2010). Critical Illness Myopathy. Retrieved February 24, 2010 from <http://www.aanem.org/education/patientinfo/CriticalIllnessMyopathy.cfm>
- Bobath, B. (1978). Adult hemiplegia: Evaluation and treatment (2nd ed.). Great Britain: Heinemann Medical Books.
- Cleveland Clinic. (2009 June). *Hypertrophic Cardiomyopathy*. Retrieved February 24, 2010 from www.clevelandclinic.com.
- Gillen, G. (2006). Cerebrovascular accident/stroke. In McHugh Pendleton, H. & Schultz-Krohn, W. (Eds.). *Pedretti's Occupational Therapy Practice Skills for Physical Dysfunction* (pp. 802-837). (10th edition). St. Louis: Mosby Elsevier.
- Horowitz, B.P. (2002). Occupational therapy home assessments: Supporting community living through client-centered practice. *Occupational Therapy in Mental Health*, 18, 1-17.
- Kollen, B.J., Lennon, S., Lyons, B., Wheatley-Smith, L., Scheper, M., Buurke, J.H., Halfens, J., Geurts, A.C.H., & Kwakkel, G. (2009). The effectiveness of the Bobath concept in stroke rehabilitation: What is the evidence? *Stroke*, 40, 89-97.
- Law, M., Baptiste, S., Carswell, A., McColl, M.A., Polatajko, H., & Pollock, N. (1994). Canadian occupational performance measure. (2nd Ed.). Canadian Association of Occupational Therapists.
- Law, M., & Mills, J. (1998). Client-centered occupational therapy. In Law, M. (Ed.). *Client-Centered Occupational Therapy* (pp. 1-18). Thorofare, NJ: SLACK Inc.
- Mathiowetz, V., Weber, K., Kashman, N. & Volland, G. (1985). Adult norms of the Nine

- Hole Peg Test of finger dexterity. *Occupational Therapy Journal of Research*, 5, 24-38.
- Morris, D., Crago, J., & Taub, E. (2002). Graded Wolf Motor Function Test Manual. University of Alabama at Birmingham and Birmingham Veteran's Administration Center.
- Paci, M. (2003). Physiotherapy based on the Bobath concept for adults with post-stroke hemiplegia: A review of effectiveness studies. *Journal of Rehabilitative Medicine*, 35, 2-7.
- Phipps, S. & Richardson, P. (2007). Occupational therapy outcomes for clients with traumatic brain injury and stroke using the Canadian Occupational Performance Measure. *American Journal of Occupational Therapy*, 61, 328-334.
- Salberg, L. (2009, January 6). Hypertrophic Cardiomyopathy Association: *Options for Septal Reduction*. Retrieved February 24, 2010 from www.4hcm.org/hcm/treatment.
- Salter, J., Camp, Y., Pierce, L.L., & Mion, L.C. (1991). Rehabilitation nursing approaches to cerebrovascular accident: A comparison of two approaches. *Rehabilitation Nursing*, 16, 62-66.
- Seneviratne, C. & Reimer, M. (2004). Neurodevelopmental treatment and stroke rehabilitation: A critique and extension for neuroscience nursing practice. *Axon*, 26, 13-20.
- Sietsema, J.M., Nelson, D.L., Mulder, R.M., Mervau-Scheidel, D., & White, B.E. (1993) The use of a game to promote arm reach in persons with traumatic brain injury. *American Journal of Occupational Therapy*, 47, 19-24.

Taylor, R. (2003). Extending client-centered practice: the use of participatory methods to empower clients. *Occupational Therapy in Mental Health, 19*, 57-75.

Tsorlakis, N., Evaggelinou, C., Grouios, G., & Tsorbatzoudis, C. (2004). Effect of intensive neurodevelopmental treatment in gross motor function of children with cerebral palsy. *Developmental Medicine & Child Neurology, 46*, 740-745.

U.S. Census Bureau. (2010, February 23). *State and County quickfacts*. Retrieved April 14, 2010, from <http://quickfacts.census.gov/qfd/states/39/39161.html>